THE MASTOID OPERATION IN CHRONIC SUPPURATIVE OTITIS MEDIA.*

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OF ALL diseases with which the otologist has to do, probably chronic ofitis media gives him the most annoyance. These cases, more frequently than otherwise, are unsatisfactory to treat on account of their obstinacy to all the blandishments of the most versatile of conservative specialists; and further, on account of their proneness to recur, though pronounced cured, on the slightest provocation, even after lying dormant for shorter or longer periods of time. It is sometimes not an easy matter to draw a hard and fast distinction between an acute and chronic otitis media, as time is not always the important factor in chronicity, for chronic cases are usually mild as to intensity besides being slow as to progress, while acute diseases are attended with more or less violent symptoms which come speedily to a crisis, but some chronic conditions may have decidedly violent symptoms throughout. (1.)

For discussion, it will be convenient to divide our cases of chronic otitis media into four clinical groups. In the first, we will place such cases as are influenced in regard to their chronicity by the presence of adenoid tissue in the post nasal space or hypertrophied terminated bodies in the nares. Here, the cause is largely mechanical, the secretions being retained by the pressure of these growths and the hyperemia of the mucosa with progressive round cell infiltration and a pyogenic process. Early this pyogenic process affects the tympanum alone, but in the second group the mucosa is hypertrophied, granulations spring up and polypoid degeneration sets in. The degeneration extends to and involves the periostum, interferes with the protection and nutrition of the ossicles and bony walls of the tympanum and accessory spaces, giving rise to foci of necrosis and caries. In the third group, we have evidences of progressive involvement of the mastoid antrum and mastoid cells, with cholesteatomatous formations. In the fourth group, the chronicity is evidently due to some systemic trouble, such as syphilis, tuberculosis, diabetes or Bright's disease. If the disease, although of recent date, was not preceded by pain or other manifest symptoms, except the discharge, a tuberculous etiology is suggested. If in the presence of the otitis, on testing with the tuning fork, there is found to be considerable diminution of bone-conduction, this would indicate disease of the labyrinth associated with the middle ear disease, and in all probability secondary to it. (2.)

The profession in general are too prone to neglect "running ears," and to pass such cases over lightly, saying "they will outgrow it in time." It certainly is true that many affected with chronic purulent otitis media live to an advanced old age and die of some disease not even remotely connected with this trouble; but, on the other hand, the disease progresses so insidiously that one cannot be certain when and where it may end. When the tympanic cavity has become the seat of chronic suppuration with the mucous membrane extending into the antrum, involved, it becomes a standing menace to the safety of the patient. (3.)

All cases of chronic otorrhea are interesting to the conscientious aurist, and they certainly are to me; but in those cases where the disease has passed the boundaries of the normal institute of hearing, then it assumes an importance and interest second to no other. It then attacks the vital center itself, and phenomena are produced, the variety and multiplicity of which are only limited by the number of separate and individual areas of the brain and surrounding structures. (4.)

A professional classification of treatment according to expressed views, writes Frank Allport, might be designated as follows: The *ultraconservatives, conservatives* and *radicals.* The ultraconservatives are those still possessing an abiding faith in the syringe, cleanliness, insufflations, drugs, mild surgical procedures such as polypi removals, etc., and who believe that all decided surgical measures, such as ossiculectomies and tympanal curettage,or worse,are not only unnecessary, but unwarrantably dangerous unless distinct mastoid symptoms are present. The conservatives are those who give the previous treatment an opportunity of several months to effect a cure, failing in which, the tympanum is usually swept clear of pathological products. Many of them, but not all, regard a radical mastoid operation as a *dernier resort,* not to be performed until all other means have failed, after persistent effort, and perhaps not then in the absence of mastoid symptoms. Other conservatives advise a radical operation more readily. The radicals are those who waste no time over the preceding methods, but open the antrum, mastoid and tympanum as soon as chronicity is established. In this view they are supported by the opinion that the mastoid antrum is an actual anatomical extension of the tympanic attic, and unusually participates in chronic suppuration of the latter, and should be thoroughly opened and cleaned as soon as brief ordinary unavailing treatment has practically proved the existence of antral disease. They believe, therefore, that chronic otorrhea implies antrum involvement, perhaps induced by exuberant middle ear granulations, which retain antral pus, unreachable and incurable by tympanal treatment or operation, and that such measures are mere placebos. They feel that necrosed bone in other parts of the body, even when exposed to view and readily subject to local treatment by acids in proper strengths, is treated by the skillful surgeon by radical surgical intervention, and not by tedious and unsatisfactory applications. They feel that the important and complicated structures of the middle ear should be treated upon the same general surgical principles, but with their importance much accentuated. They also believe that an effort should be made to save the ossicles in a fairly physiological condition, naturally impossible after ossiculectomy, and that the only probable method of accomplishing this is by the performance of the radical operation. (5.)

The great number of patients that formerly died with inflammation of the bowels we now believe died with appendicitis. We know that many who are reported to have died with brain fever, came to their end through infection from the middle ear. (6.)

Conservatism is a worthy quality when it is supported by clinical experience, which is the criterion for rational treatment. Therefore, when faithful and

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correct treatment has failed to accomplish a cure of chronic suppurative middle ear otitis, even if there are no manifest symptoms of serious destructive processes within the attic, antrum or mastoid, we must, without hesitation, resort to more heroic measures. (7.)

Hiram Wood relates two cases in which mastoid symptoms were slight and late in appearing, but in both of which operation showed extensive necrosis with symptoms of general infection out of proportion to the apparent involvement. (8.)

With advanced years osteosclerosis of the mastoid process frequently occurs, but is usually confined to the external portion, while the internal portion of the temporal bone retains its spongy character. For this reason suppurative processes do not readily work outward, while serious lesions may be progressing in the depths. This fact forces the conclusion that patients over forty with inflammation of the middle ear should be operated on as promptly as possible, otherwise rapidly fatal cerebral complications are liable to supervene. (9.)

Tuttle says: "All cases of chronic purulent otitis media resulting in mastoiditis should be operated on at the first appearance of symptoms without resorting to palliative measures, and that we are justified in opening the antrum for drainage in chronic cases of this condition without symptoms of mastoiditis." (10.)

MacEwen lays down this axiom: "When a pyogenic lesion exists in the middle ear or in its adnexa, which is either not accessible or which cannot be effectually eradicated through the external ear, the mastoid antrum and cells ought to be opened." (3.)

It certainly requires conviction and courage to advise a radical operation on the absence of mastoid symptoms, especially in the early stages of a chronic discharge. So many people are unquestionably cured of such a discharge without an operation that patients who become familiar with this fact must indeed have supreme faith in their surgical adviser when they mount the operating table under these circumstances; and it must be admitted that a consequent facial paralysis, impaired hearing, protracted healing, continued discharge, fistula or death cannot serve to exalt the professional position of the operator in the minds of the laity, the profession or even himself. Of course, the complexion of the case absolutely changes in the presence of long-continued discharge unchecked by persistent conservative procedures, cholesteatoma, or of mastoid or intracranial symptoms, under which circumstances the patient himself frequently demands radical relief. But in the absence of such indications, no surgeon should be blamed for the advocacy of conservative measures, especially when it is remembered that a cessation of the discharge and improvement of hearing frequently follows ossiculectomy and curettage. These illy defined and insidious forms of chronic otorrhea with antrum or cell infection, but unaccompanied by palpable symptoms of such extensions, are certainly difficult ones in which to decide upon a plan of action unless one happens to be a radical in his opinion. The gravity of the situation may not be always measured by the quantity, quality or odor of the discharge, although these indications often mean much; but certain ill-defined symptoms, such as a slight rise in temperature, irritability, nervous exhalation, mental depression and general appearance of parts, are not without their significance.

Concerning the radical operation, it may be confidently stated that he must be very conservative indeed who denies the advisability of such a step in the presence of mastoid or intracranial symptoms, or of distinct organized cholesteatomatous masses. And there are many eminent surgeons who would not advise a radical operation in long-continued and intractable discharge without the above history, but there are at present comparatively few who are willing to go on record as advising such an operation as soon as chronicity of the discharge is established, say in a few weeks after the inception of the discharge. And yet we must not forget the eminence of the authority on this side of the argument, nor fail to lay much stress upon their plainly spoken opinions. Most of the radicals are our teachers, men to whom we look for advance and correct thought, and their sentiments cannot and should not be turned lightly aside and dismissed as too extreme. It may be that their very eminence and skill in operating, however, has much to do with their results and consequent views, and the question may be justly raised whether inferior but ambitious operators are warranted in following their leadings. (5.)

Stucky says: "The anatomic construction of the middle ear favors pathologic conditions, and he considers the establishment of free drainage most important in the cure of this condition. In all cases in which there is a large-sized canal with chronic disease of the attic, perforation of Shrapnell's membrane, and all the conditions attending suppuration and often necrosis, removal of the ossicles with a portion or all of the anterior attic wall and remnants of the drum membrane is considered the most conservative and satisfactory treatment. In chronic suppuration with cholesteatoma and necrosis of the posterior superior wall of the canal, the radical operation should be performed. The following claims are made for the conservative method, viz.: (1) It gives free drainage. (2) It affords an opportunity to successfully combat the suppurative process. (3) It is free from danger to life and health. (4) In a large percentage of cases the disease is arrested, the hearing improved, only rarely made worse.. (5) There is no deformity or scar." (11.)

On the other hand, quoting from MacEwen: "The object of the mastoid operation is not to drain the inflamed chambers of the middle ear. The object of the operation is to remove the disease. After that has been accomplished there will be nothing to drain away. In the class of cases under consideration, it is necessary to remove the disease from every recess to which it has penetrated. Not only should the antrum and the cells be freed of the infection, but the tympanum should always be thoroughly curetted, and the malleus and incus should be removed when they are in a state of caries. Sufficient bone must be cut away to give the operator an opportunity to ascertain the precise condition of the various parts. Objections may be raised against this doctrine on the supposition that such radical invasion of the middle ear will prove disastrous to its function. So far as may be compatible with the well-being of the patient, I agree that the integrity of the ear should be conserved. But the handling which I have advised for the tympanum, however rough it may appear to be, does not necessarily injure the hearing. Whenever the ossicles are so diseased that they must be removed, we shall find that the function of the ear had been destroyed some time before that operation was undertaken. Repeatedly have I demonstrated the fact that the most thorough curetting of the middle ear is not incompatible with the preservation of acute hearing." (3.)

In recent years the great value and desirability of having microscopical examinations made of purulent discharges from the middle ear has become manifest. Statistics show that if the diplococcus pneumoniae (Franekel) alone be found, one may prognosticate a speedy cure; and further, one may, with equal confidence, sew up the mastoid wound completely and discharge the patient in about one week, or, at most, in not over two weeks.

With streptococci alone present, fifty per cent come to a cure. With the streptococcus and pyocyaneous, the chances are even of an eventual, if

tardy, cure. With streptococci and staphylococci, the chances are two to one against cure. If staphylococci alone, four out of nine may come to a cure. If pyocyaneous alone, one-half may be cured and the others may prove stubborn. If coli bacillus communis be the germ, it is practically incurable. All these may prove stubborn and resisting, except the diplococcus pneumoniae (Franekel), which yields forthwith to pepsin. About one-fifth of all the cases come in this class. (12.)

In regard to the conditions calling for operative interference, we may say: The patient's subjective symptoms are, as a rule, not particularly reliable, the appearance of the skin over the mastoid may be very deceptive, but if a fistula exists, opening either with or without the external auditory canal, operative interference becomes a necessity. Pain or pressure over the point of the mastoid process is not at all constant, but if present there or at the base it is indicative of mastoiditis; if it exists at the posterior border of mastoid, it is disquieting and brooks no delay on the part of the surgeon. Torticollis in the course of a chronic otitis media makes one suspicious of pus burrowing from the mastoid into the deep tissues of the neck.

M. Lermoyez says: "In case of tumefaction of the soft parts over the mastoid, with edema, examine the condition every day, and if a point of fluctuation is discovered in the midst of the edema, operate at once. A still more important indication is furnished by the swelling of the mastoid *en masse*, with the skin normal, scarcely to be distinguished except by comparing the two sides, always bearing in mind that the right is normally larger. Trephine then immediately, as there is every chance that the sigmoid sinus is already bathed in pus. If abundant suppuration persists after a month of rational treatment, and the amount increases, mastoid otitis is certain. If the discharge remains fetid, it indicates some old lesion, generally a cholesteatoma. In this case trephining is insufficient and total petromastoid evacuation is demanded." (13.)

Otogenic fever of even 100 degrees, if the tympanum has been amply incised, and drainage be free, demands trephining. With cerebral symptoms, first investigate whether they are exclusive otogenic; if they be, trephine the mastoid at once, but do not go beyond the antrum. If this does not afford relief, open the skull the following day, but always proceed by one step a day, providing you have been watching the case from the beginning of the cerebral symptoms. If the ophthalmoscope shows the eye intact, the chances are in favor of "simple meningitis"; hyperemia of the papilla warns of cerebral complication, and optic neutritis indicates a developed meningo-encephalitic lesion. Mastoid lesions are more precocious and profound in the otitis due to scarlet fever or la grippe than in that which follows measles or a cold. Hemophilia and advanced diabetes, not meningitis, are contra-indications to operation. Instances have been recorded of otitic meningitis cured by extensive trephining of the mastoid without opening the dura. In all persistently unsatisfactory cases of chronic otitis media operate, but never make a Wilde's incision alone. It can seldom do good and may do much harm. It has never cured excepting a case of mere retroauricular suppuration of lymphatic glands, and owes its reputation largely, if not exclusively, to errors in diagnosis. (13.)

F. W. Tunnicliffe and Otto Rosenheim say: "The presence of polypus or granulation tissue is indicative of antrum or attic trouble, or both; suppuration from the middle ear which does not yield promptly to treatment should be subjected to surgical interference." (14.)

How, then, may we determine the existence of antral disease in a case without significant symptoms? It is impossible to answer this question definity, there being no fixed rules by which to ascertain such extension in quiescent cases, and an opinion must be accumulated by composite observation, which is nevertheless reasonably trustworthy. Aural discharge, especially if persistently foul and profuse, continuing in spite of proper local treatment for a period say of three months, is a decidedly suspicious condition, particularly when accompanied by recurrent and exuberant granulations and necrosis. Especially is this true if the membranal opening has been in Sharpnell's membrane, or in the posterior superior quadrant of the main membrane, and if carious bone can be located in the upper and posterior wall of the tympanic cavity, or if the upper and posterior walls of the deep meatus are red, bulging or sensitive. These observations are much strengthened if the discharge is cheesy or flaky or contains the streptococcus, influenza or tubercle bacilli, and if the tympanum has been cleared by a curettage. A case presenting such a picture, or even a reasonable portion of it, even if absolutely unaccompanied by mastoid or other significant symptoms, would certainly lead most progressive surgeons to unhesitatingly advise either an ossiculectomy or radical operation. (3.)

Herman Schwartze, the wise sage of Halle, said, viz., that the diagnosis of cranial abscess could be made with probability only, and never with absolute certainty; that all the symptoms might be present without abscess, or, on the other hand, with not a single symptom it could yet be there; but given a focus of pus of otitic origin in the cranial cavity, where would we most naturally expect to find it, and how would the symptoms vary according to the location? By far the great majority occur, first, as extra-dural; second, as temporo-sphenoidal, or third, as cerebellar abscesses. Now it is a well-known fact that extra-dural abscess gives no characteristic symptom, even when there is a large amount of pus, and can with certainty be said to exist only when the fistulous opening is discovered and the pus gushes or exudes from this opening. Pressure symptoms, when the collection is great, may present themselves, especially the slowness of pulse. The second variety —temporo-sphenoidal—and a common variety, by the way, are often characterized by facial or hypoglossal paralysis, or some form of motor or sensory aphasia. Word deafness may occur in abscess of first temporal convolution. It is in the cerebellar abscess, however, that we get some of the most characteristic symptoms. Pain, nausea and vomiting are uncommonly severe and persistent. But the chief symptoms are the cerebellar ataxia, a feeling of dizziness or vertigo, and the two together are, by Hessler, who has collected large statistics, considered pathognomonic. (14.)

It is not to be wondered at that, however brilliant the diagnosis may be, and however skillfully the operation may be done, success does not always attend work along the line of otitic cerebral surgery. The localization of the lesion is not always clear. Lesions may exist other than those made clear through the grouping of symptoms, and the pathological changes exposed may have progressed so far as to preclude the possibility of successful issue, all of which are independent, in the light of our present knowledge and skill in diagnosis and surgical intervention. It therefore becomes incumbent upon us to report not only our successes, but more imperative to report our failures, as through them not only we, but likewise others, may profit. I fear that we are too prone to report our successful cases and too apt to forget our failures. To be sure, it is no disgrace for one to fail in relieving a helpless or moribund patient, but nevertheless the human mind is so constructed as not to wish to subject failures to the close scrutiny of criticism. (15.)

I will, however, report my four unsuccessful cases.

CASE 1.

I. O. W. H., age 24, the son of a physician and a Stanford student, was referred to me on the 10th of August, 1900. He reported that he had had ear trouble for seven years, and that Dr. W. E. Hopkins, of San Francisco, had removed the small bone from his right ear six years ago, but for the past ten months the ear had been suppurating. He also reported that while there was no actual pain in or about the ear, that there was an indescribable something in the right side of his head which prevented him from making close application to his work, and so he had to quit college to have his ear treated. He could hear the watch at a distance of three inches. There was no tenderness in the mastoid region, the suppuration was scant and mucoid in character, and he seldom had an afternoon temperature of more than a half degree elevation. I found a large amount of adenoid tissue in his post-nasal space, which I removed; put him under careful treatment, both as to diet and local application, until the following February, when, the discharge being no less and his mental disquietude greater, and the retina of the right eye more congested than the left, I did an antrectomy.

The mastoid was eburnated, so finding the chisel too slow a process I used the drill; but even with this did not succeed in finding an antrum, though I did make communication with the attic. A peculiar accident occurred in the use of the drill; as I entered the attic a quarter of an inch of the tip of the drill snapped off. As no pus nor granulation tissue had been discovered, and irrigation through the wound had free vent through the ear, the consulting physician was not willing that I should remove the postero-superior wall of the meatus. He took this position largely, however, I think, because of the condition of the respiration and pulse of the patient at that stage of the operation. I closed the wound with catgut sutures and had healing without suppuration inside of a week. The patient was extremely nauseated for forty-eight hours, vomiting or hiccuping at very short intervals. On the eighth day, upon irrigating the external auditory canal, I washed out the end of the drill. In two weeks the ear had ceased suppurating, and the patient was looking forward to his return to Stanford in the fall. On the 24th of March, five weeks after the operation, a soft place appeared in the cicatrix and I evacuated about five minims of pus, and the wound healed without further trouble. On the 30th he went to a dance, from which he returned early in the morning, and along about ten o'clock a. m. he had an epileptic fit, and remained unconscious for thirty-six hours, during this time having two other paroxysms. He gradually grew better, but with much temporal headache, till the 8th day of April, when he became much worse. His mind was wandering and his temperature very high. On the 9th of April I trephined over the right ear and slightly behind it, but found only softened brain tissues, without pus. He died some six hours later. No autopsy.

CASE 2.

W. R., a hearty country boy, age 19, referred to me March 17th, 1902, gave history of discharge from right ear since December 1901. For the preceding two weeks he had had considerable fever, running as high as 104 degrees, with tenderness and swelling at the tip of the mastoid and below. An antrectomy was performed, granulation tissue only was found, and pus was not found at the tip of the mastoid. The wound was packed with gauze; patient was slightly nauseated and had one vomiting spell during the day. Thirty-six hours later he had a chill with a a temperature of 104 and free perspiration. This was repeated in thirty-six hours, with a range of temperature from 99 to 105.1 degrees. From this I diagnosed thrombosis of the sigmoid sinus. So on the 11th, under chloroform, I opened the lateral sinus, removed the clot and obtained free bleeding from both ends of sinus opening. There was marked improvement for two days, when suddenly the temperature went from 100 degrees to 104 degrees, and the pulse from 96 to 150, accompanied by headache and vomiting, and this, in turn, being followed by stupor and delirium. On the 15th, the wound being perfectly clean and no indication of thrombosis of the external jugular, I trephined the cranium one and a half inches above and one and a quarter inches posterior to the auditory canal, punctured the brain in several places, but failed to locate any pus. The pressure, however, was sufficient to cause the brain to bulge markedly through the trephined opening. Cheyne-Stokes respiration set in shortly afterwards, and he died some nine hours after the last operation. No autopsy.

CASE 3.

R. J. C., male, aged 55, referred to me March 11th, 1902, with a history of discharge from the right middle ear, following la grippe, since the last of December, 1901. He had complained of being dizzy for at least two weeks. The discharge had ceased a few days before he was brought to me. but after its cessation the dizziness had become markedly worse, the temperature was ranging around 102 degrees, he had vomiting of an explosive type, convulsive movements of the legs and some neuralgia of the right side of the face, and retention of the urine, but for some days comparatively little pain in the ear. He entered the California Hospital on the 11th of March, with a temperature of 102 degrees and a pulse of 90. On the second day he complained of double vision, was drowsy, irrational, restless and hard to manage. Use of the opthalmosccpe gave only negative information; the temperature was erratic, varying from 95 to 102 degrees in the axilla, frequently being 1½ degrees higher on one side than the other, the right side usually being the higher, but not always. His mental symptoms becoming worse, his urine being normal (although always removed artificially), and the typhoid tests proving negative, operation was decided upon. On the 15th, the antrum was opened, but only granulation tissue was found. On the 17th he was quite rational; on the 19th he became worse; on the 21st Cheyne-Stokes breathing set in, and on the 25th he died. Autopsy by Drs. Brainerd and Lasher, no microscopic lesion was to be found, not even a local meningitis at the seat of trephining. No report has yet been received in regard to the microscopic conditions found.

CASE 4.

G. B. M., female, age 17, was referred to me March 17th, 1902, with the following history: Three weeks previously had an attack of acute otitis media, right ear, followed by typhoid fever, and for a week had been having chills, and part of the time was unconscious, with a range of temperature from 98 to 106 degrees within twenty-four hours. Marked tenderness over the antrum, with some swelling below the tip of the mastoid. Opened up the antrum, evacuating pus from there and some of the larger mastoid cells; exposed the lateral sinus, opened and removed clot, obtaining free bleeding from sinus in both directions; removed all softened bone; packed wound with gauze. Half an hour after the operation patient was bright and cheerful, but within twelve hours became delirious and rapidly sank, with symptoms of brain involvement. No autopsy.

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2. John F. Oaks, Philadelphia, Medical Journal, March 24, 1900, page 685.
3. Wm. MacEwen, Diseases of the Brain and Spinal Cord.
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PROCEEDINGS OF THE REGULAR MEETING OF THE SAN FRANCISCO COUNTY MEDICAL SOCIETY, HELD TUESDAY EVENING, NOVEMBER 11, 1902.

The regular monthly meeting of the San Francisco County Medical Society was held in the parlors of the Y. M. C. A. Building, President John C. Spencer in the chair.

After the reading and approval of the minutes of the last meeting, and the usual routine in opening the session, Dr. Harry M. Sherman read a paper on "Points in the Management of Cleft Palate Cases, Before, During, and After Operation."

Doctor Sherman exhibited a number of instruments used in the operation discussed, to the Society.*

Doctor Sherman also read "A Note Regarding Supra Condyloid Fractures of the Humerus."

This subject was discussed by Dr. Rixford, Dr. J. Henry Barbat, Dr. Cooper, Dr. Hunkin, and Dr. Kenyon, the point at issue being the best position in which to dress the fractured arm.

Upon the suggestion of the authors, the reading of two papers announced to be presented at the meeting—"The Diagnosis of Diseases of the Gall-Bladder," by Dr. W. W. Kerr, and "Report of a Case of Acute Phlegmonous Cholecystitis," by Dr. L. W. Allen—was postponed until the next regular meeting.

The annual reports of the Secretary, Treasurer, Librarian and Standing Committees were read. The Librarian recommended several changes with reference to the list of journals subscribed for and pertaining to the Library, which were approved.

After the Treasurer's report had been read, showing a larger balance in the Treasury than the Society needs for covering current expenses, on motion of Dr. Gibbons, $600 was transferred to the Trustees for deposit in a savings bank.

The election of officers to serve for the ensuing year resulted as follows:

President.....Louis A. Kengla.
First Vice-President.....Theodore Rethers.
Second Vice-President.....Redmond Payne.
Secretary.....William F. Barbat.
Assistant Secretary.....H. E. Alderson.
Treasurer.....Frank R. Dray.
Librarian and Curator.....Vard H. Hulen.

Trustees: Henry Gibbons, Jr., W. W. Kerr, L. L. Dorr.

Executive Committee: E. M. Bixby, W. P. Harvey, George McChesney.

Committee on Admissions: L. W. Allen, Dora I. Dorn, J. Mora Moss, A. W. Morton, H. B. A. Kugeler.

Committee on Ethics: Leo Newmark, Philip King Brown, Stanley Stillman, William Fitch Cheney, George B. Somers.

Committee on Finances: E. L. Wemple, E. G. Frisbie, G. Caglieri.

Committee on Library: Vard H. Hulen, Clarence Quinan, Dudley Tait.

Committee on Public Health: William Ophüls, J. M. Williamson, Louis Bazet, W. A. Martin, Emma Sutro Merritt.

Delegates to the Medical Society of the State of California: H. A. L. Ryfkogel, M. W. Frederick, Emmet Rixford, Wallace I. Terry, J. Henry Barbat, William Fitch Cheney, A. W. Perry, John C. Spencer.

A resolution, adopted by a rising vote, was passed conveying to Dr. John C. Spencer the appreciation and thanks of the Society for his distinguished services as president during the past year.

Adjourned to meet the second Tuesday evening in December.

* Doctor Sherman's paper will be printed in the December number of the *Journal.*

TRI-COUNTY SOCIETY.

The Tri-County Medical Society of California met in this city on Wednesday evening. Dr. Saxton Pope, the secretary of the society, arrived on the afternoon train and Dr. F. H. Patterson of San Juan, Dr. R. W. O'Bannon of Hollister and Dr. Deckleman of Monterey, representing the members, were on hand in the evening. Drs. D. L. Deal, W. V. Grimes and G. S. Trimmer were present as visitors.

Dr. Patterson acted as chairman pro tem. After the discussion of several topics of interest to the society the applications of Doctors Grimes, Deal and Trimmer for membership were received.

Dr. Pope read a very interesttng, instructive paper upon the subject, "Mosquitoes from a Medical Standpoint." The value of the paper was very materially increased by the splendid enlarged illustrations, which also represented Dr. Pope's artistic skill.—*Pacific Grove Review.*

THE MASTOID OPERATION.

(*Continued from Page 17.*)

5. Treatment of Chronic Otorrhea, Frank Allport, Journal of A. M. A., March 2, 1901, page 543.

6. The Radical Cure for Chronic Suppurative Otitis Media, L. S. Cline, Indiana Medical Journal, June, 1901, page 451.

7. Clinical Memoranda on Chronic Suppurative Otitis Media, John F. Oaks, Philadelphia Medical Journal, March 24, 1900, page 685.

8. American Medicine, February 8, 1902, page 247.

9. Heine, Journal of A. M. A., October 13, 1900. page 98.

10. Mastoiditis, T. D. Tuttle, Denver Medical Times, January, 1901.

11. J. A. Stucky, American Medicine, June 15, 1901, page 516.

12. Bacteriological Examination of Otitis Media Purulent and Suppurative Mastoiditis, Talbot R. Chambers, Journal A. M. A., December 1, 1900.

13. Journal American Medical Association, July 21, 1900, page 194.

14. American Medicine, April 20, 1901, page 128.

15. Charles N. Richardson, Journal A. M. A., February 23, 1901.